

## Section 1

**MANAGEMENT OF CHANGE (MOC)**

MOC No: 12945	Originator: Beckley, Daniel E.	Date Issued: 1/15/2004	Passport No: N/A	EWO No: N/A	ABU: RLOP	Plant: RLOP General	Year: 2004
Section 2 Reviewer: Nelson, Eric J.	MOC Category: Routine	PSM:	MOC Type: Permanent	Expiration Date:	Other Temporary Reason		
Project/Equipment Title: Reactor Furnaces - Raise Maximum Fuel Gas Pressure Limit							
Description of Change: Plan to raise the fuel gas pressure of furnaces that have the John Zink PSFFG-17 burner installed from a current maximum of 10 psig to 15 psig. This includes F-1110, F-1310, F-1410, and F1610.							

MOC will be required if the change will:

- ☐ Cause the use of different feed, chemicals or catalysts?  
☒ Cause the use of different process conditions, process control, instrumentation, and protective devices or affect upstream/downstream plants?  
☐ Cause the use of new or modified equipment [which is other than inkind]?  
☐ Alter equipment siting, building, trailer locations, roads or fire protection?  
☐ Require modifying existing and/or developing new procedures?

☒ Simultaneously Begin Construction and Start-up

## Section 2

Stage 1	Pre-Implementation	Dept./Person Responsible	Date Complete	Completed By	References
	Design Review	MacDonald, David M.	3/2/2004	MacDonald, David M.	
	Process Engineering Review	Beckley, Daniel E.	2/23/2004	Beckley, Daniel E.	
	Instrumentation Review				
	Control System Review	Gonzalez, Mauricio E.	4/14/2004	Gonzalez, Mauricio E.	
	Utilities Review				
	Environmental/Regulatory Review	Hiler, Craig E.	1/19/2004	Hiler, Craig E.	
	Safety/Regulatory Review	Miller, Mark A.	2/4/2004	Miller, Mark A.	
	Building Permits Review				
	Mechanical Review				
	Inspection Review				
	Metallurgy Review				
	Construction Review				
	Leak Seal Review				
	Relief System Review				
	Infrastructure Review				
	PHA/HSE Review	Nelson, Eric J.	4/13/2004	Nelson, Eric J.	

Authorization to Implement Change (Begin Construction): Approver: Nelson, Eric J. Date: 9/11/2004

Stage 2	Pre-Startup	Dept./Person Responsible	Date Complete	Completed By	References
	Procedures Review	Barthel, John J.	1/10/2005	Norris, Paul	
	Communication/Training 1	Nelson, Eric J.	9/11/2004	Nelson, Eric J.	
	Pre Start-up Safety Review	Kaylor, Lisa A.	9/11/2004	Kaylor, Lisa A.	

Authorization to Start-Up Change: Approver: Nelson, Eric J. Date: 9/11/2004

 Extension of Temporary Change  
Approved By:

Approver:

Expiration Date:

Extension Reason

Stage 3	Post-Startup	Dept./Person Responsible	Date Complete	Completed By	References
	Communication/Training				
	Process Safety Information	Christensen, Keith R.	6/15/2006	Christensen, Keith R.	

 Change in Place - Reviews,  
Documentation & Testing Complete

Approver:

Date:

Nelson, Eric J.

7/20/2006

MOC Cancelled:

Approver:

Date:

Cancellation Reason:

Note 1: Emergency request for change should be routed by the Approver on the next working day

Retain Original in Division for five Years

## DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

<b>MOC Number</b>	12945
<b>Filing Reference</b>	
<b>Person Responsible</b>	MacDonald, David M.
<b>Completed by</b>	MacDonald, David M.
<b>Date Completed</b>	3/2/2004

### Project/Equipment Description:

Plan to raise the fuel gas pressure of furnaces that have the John Zink PSFFG-17 burner installed from a current maximum of 10 psig to 15 psig. This includes F-1110, F-1310, F-1410, and F1610.

\*When possible include copies of documents referenced in the summary.

## DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 12945

Filing Reference

Person Responsible MacDonald, David M.

Completed by MacDonald, David M.

Date Completed 3/2/2004

### Project/Equipment Description:

Plan to raise the fuel gas pressure of furnaces that have the John Zink PSFFG-17 burner installed from a current maximum of 10 psig to 15 psig. This includes F-1110, F-1310, F-1410, and F1610.

### ENGINEERING REVIEW

- ☐ BIN Best Practic
- ☐ Civil & Structural
- ☐ Equipment Data Sheet
- ☐ Equipment Specification
- ☐ Fire Protection
- ☐ Hot Tap
- ☐ P&ID's Change due to New / Modified equipment
- ☐ P&ID's Change - Field condition not matching existing P&ID
- ☐ Plot Plan
- ☐ Seismic
- ☐ SIS Update
- ☐ Temporary Leak Repair

### EQUIPMENT REVIEW

- |                                                                          |                                                        |
|--------------------------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> Columns & Pressure Vessels                      | <input type="checkbox"/> Instrumentation               |
| <input type="checkbox"/> Compressor, Blowers & Mechanical Equipment      | <input type="checkbox"/> Insulation                    |
| <input type="checkbox"/> Concrete & Steel Structure, Walks and Stair     | <input type="checkbox"/> Noise                         |
| <input type="checkbox"/> Control Rooms & Building                        | <input type="checkbox"/> Piping                        |
| <input type="checkbox"/> Exchangers, Condensers, Heaters & Cooling Tower | <input type="checkbox"/> Pumps & Drivers               |
| <input type="checkbox"/> Facilities & Siting                             | <input type="checkbox"/> Relief & Venting Systems      |
| <input type="checkbox"/> Foundation                                      | <input type="checkbox"/> Sewers, Roads & Miscellaneous |
| <input type="checkbox"/> Furances & Boilers                              | <input type="checkbox"/> Tanks                         |
| <input type="checkbox"/> Honeywell                                       | <input type="checkbox"/> Update Refinery Relief Study  |
| <input type="checkbox"/> Honeywell Process Simulator                     | <input type="checkbox"/> Utility Systems               |
| <input type="checkbox"/> HVAC                                            |                                                        |

### SUMMARY OF REVIEW\*

Subject matter expert Dan Beckley has consulted John Zink on this fuel gas pressure change and they have stated that it will not cause flame stability problems. I will have to defer to Dan Beckley's judgement on this change and his knowledge of fuel gas composition and consultations with John Zink. I can think of no other design issues associated with this job.

\*When possible include copies of documents referenced in the summary.

## DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 12945

Filing Reference

Person Responsible MacDonald, David M.

Completed by MacDonald, David M.

Date Completed 3/2/2004

### Project/Equipment Description:

Plan to raise the fuel gas pressure of furnaces that have the John Zink PSFFG-17 burner installed from a current maximum of 10 psig to 15 psig. This includes F-1110, F-1310, F-1410, and F1610.

□ HVAC

\*When possible include copies of documents referenced in the summary.

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## PROCESS ENGINEERING REVIEW CHECKLIST

You have been assigned a Process Engineering Review.  
This checklist is a guide to help ensure that all information  
necessary to evaluate the change is considered.

MOC Number 12945

Filing Reference

Person Responsible Beckley, Daniel E.

Completed By Beckley, Daniel E.

Date Completed 2/23/2004

### Project/Equipment Title:

Reactor Furnaces - Raise Maximum Fuel Gas Pressure Limit

### DOCUMENTATION

- ☐ Drafting Work Requisition, MFG-5545
- ☐ Maximum Intended Inventory Update
- ☐ MSDS's
- ☐ PED Records
- ☐ Relief System Drawings

### PROCESSES REVIEW

- |                                                                      |                                                        |
|----------------------------------------------------------------------|--------------------------------------------------------|
| <input type="checkbox"/> ASTM-TBP-EFV Distillation Relationships     | <input type="checkbox"/> Suppliers' Performance        |
| <input type="checkbox"/> BIN Best Practice                           | <input type="checkbox"/> Surface Tensions              |
| <input type="checkbox"/> Characterization of Petroleum Fractions     | <input type="checkbox"/> Thermal Properties            |
| <input type="checkbox"/> Composition & Flow Information              | <input type="checkbox"/> Upstream & Downstream Impacts |
| <input type="checkbox"/> Conversion Factor & Constants               | <input type="checkbox"/> Vapor-Liquid Equilibria       |
| <input type="checkbox"/> Delivery Needs                              | <input type="checkbox"/> Vapor Pressures               |
| <input type="checkbox"/> Densities                                   | <input type="checkbox"/> Viscosities                   |
| <input type="checkbox"/> Fundamental Properties                      |                                                        |
| <input type="checkbox"/> Honeywell                                   |                                                        |
| <input type="checkbox"/> Honeywell Process Simulator                 |                                                        |
| <input type="checkbox"/> Material & Energy Balance                   |                                                        |
| <input type="checkbox"/> New Catalyst of Feeds                       |                                                        |
| <input type="checkbox"/> Operating Parameters                        |                                                        |
| <input type="checkbox"/> Physical Properties of Streams or Catalysts |                                                        |
| <input type="checkbox"/> Solubilities                                |                                                        |

### SUMMARY OF REVIEW\*

In consultation with John Zink, we have determined that raising the fuel gas pressure limit from 10 psig to 15 psig will not cause a flame stability problem (i.e., liftoff). Since the Refinery yard DIB was installed, we have done a better job of keeping heavy ends out of the fuel gas system. This has caused the fuel gas to have a lower BTU value. Lower BTU value fuel gas requires a higher fuel pressure to reach the original design firing rate for the burners. Removing this pressure limit will allow us to operate the burners at design.

Please note that we still must maintain minimum O2 levels in our Furnaces.

\*When possible include copies of documents referenced in the summary.

## CONTROL SYSTEM REVIEW CHECKLIST

You have been assigned a Control System Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 12945

Filing Reference

Person Responsible Gonzalez, Mauricio E.

Completed By Gonzalez, Mauricio E.

Date Completed 4/14/2004

### Project/Equipment Description:

Plan to raise the fuel gas pressure of furnaces that have the John Zink PSFFG-17 burner installed from a current maximum of 10 psig to 15 psig. This includes F-1110, F-1310, F-1410, and F1610.

### CONTROL SYSTEM:

- |                                                                   |                                                                                     |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <input type="checkbox"/> Alarm Objective Analysis                 | <input type="checkbox"/> Loop Diagrams                                              |
| <input type="checkbox"/> Analyzer Instruments                     | <input type="checkbox"/> P&ID Change due to New / Modified equipment                |
| <input type="checkbox"/> Chevmon                                  | <input type="checkbox"/> P&ID's Change - Field condition not matching existing P&ID |
| <input type="checkbox"/> Control Objectives Analysis              | <input type="checkbox"/> Pressure Measurements                                      |
| <input type="checkbox"/> Control Room Design                      | <input type="checkbox"/> Process Alarms                                             |
| <input type="checkbox"/> Control Systems                          | <input type="checkbox"/> Process Control                                            |
| <input type="checkbox"/> Control Valves                           | <input type="checkbox"/> Relief Systems                                             |
| <input type="checkbox"/> DCS                                      | <input type="checkbox"/> Shutdown Systems                                           |
| <input type="checkbox"/> Egatrol                                  | <input type="checkbox"/> System Design                                              |
| <input type="checkbox"/> Electrical One-lines                     | <input type="checkbox"/> Temperatue Measurements                                    |
| <input type="checkbox"/> Field Installation                       |                                                                                     |
| <input type="checkbox"/> Flow Measurements                        |                                                                                     |
| <input type="checkbox"/> Honeywell                                |                                                                                     |
| <input type="checkbox"/> Honeywell Process Simulator              |                                                                                     |
| <input type="checkbox"/> Instrument Seals, Purges and Winterizing |                                                                                     |
| <input type="checkbox"/> Intrinsic Safety                         |                                                                                     |
| <input type="checkbox"/> Ladder Logic Diagrams                    |                                                                                     |
| <input type="checkbox"/> Level Measurements                       |                                                                                     |

### SUMMARY OF REVIEW\*

Alarm trip points for the reactor furnace F1110, F1310, F1410, and F1610 have been increased to 15 PSI. Max set point limit is 15 PSI while in auto mode.

\*When possible include copies of documents referenced in the summary.

## ENVIRONMENTAL REGULATORY REVIEW CHECKLIST

You have been assigned a Regulatory Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

### Project/Equipment Title:

Reactor Furnaces - Raise Maximum Fuel Gas Pressure Limit

MOC Number: 12945

Filing Reference:

Person Responsible: Hiler, Craig E.

Completed By: Hiler, Craig E.

Date Completed: 1/19/2004

### CHEVRON:

☐ Yellow Book

### REGULATORY:

- ☐ Army Corp Permit
- ☐ BAAQMD Air Regulations & Permits (including TitleV)
- ☐ Bay Conservation & Development Commission (BCDC)
- ☐ CEQA (EIR's, etc.)
- ☐ City of Richmond Conditional Use Permits (Land use and Hazardous Materials)
- ☐ City of Richmond Design Review Board
- ☐ Permit to Build and Remove Wells, County Permit Required
- ☐ Department of Transportation (DOT)
- ☐ EPA Benzene Neshap
- ☐ EPA Benzene Waste (BW) NESHAP
- ☐ EPA MACT Requirements
- ☐ EPA New Source Performance Standards (NSPS)
- ☐ Regulation 8 Organic Compounds Rule 8 Wastewater Collection and Separation Systems
- ☐ Risk Management & Prevention Plan (RMPP)
- ☐ RWQCB Waste Discharge Orders, EPA Consent Agreement Sites
- ☐ RWQCB NPDES Regulations & Permits
- ☐ RWQCB SB-1050, Waste Discharge Requirements (WDR)
- ☐ Spill Prevention & Counter Measure Plan (SPCC)
- ☐ Waste Regulations and Permits
- ☐ Wharf-related agencies (SLC, USCG, OSPR, EPA)
- ☐ ☐ Additions, modifications, or deletions of VOC Component/Equip

### SUMMARY OF REVIEW\*

Fuel Gas pressure to the burners is not regulated by permit to operate. No issues.

Tuesday, January 29, 2013

\*When possible include copies of documents referenced in the summary.

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## SAFETY/ENVIRONMENTAL REVIEW CHECKLIST

You have been assigned a Regulatory Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

### Project/Equipment Title:

Reactor Furnaces - Raise Maximum Fuel Gas Pressure Limit

MOC Number 12945

Filing Reference

Person Responsible Miller, Mark A.

Completed By Miller, Mark A.

Date Completed 2/4/2004

#### Yes No Health & Safety Regulatory Review:

- |                          |                          |                                           |
|--------------------------|--------------------------|-------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Changes to Refinery Instructions          |
| <input type="checkbox"/> | <input type="checkbox"/> | Cal OHSA Construction Activity Permits    |
| <input type="checkbox"/> | <input type="checkbox"/> | Meets Legal and SID Requirements          |
| <input type="checkbox"/> | <input type="checkbox"/> | Hazardous Materials Business Plan Changes |
| <input type="checkbox"/> | <input type="checkbox"/> | Special OSHA Notifications Required       |
| <input type="checkbox"/> | <input type="checkbox"/> | Impacts RMP                               |
| <input type="checkbox"/> | <input type="checkbox"/> | Additional Record Keeping Requirements    |

### SUMMARY OF REVIEW\*

No safety related concerns

\*When possible include copies of documents referenced in the summary.



## HEALTH & SAFETY EVALUATION

Date Issued: 1/15/2004

Maximo No: N/A

MOC Number 12945

ABU: RLOP

EWO No: N/A

Filing Reference

Plant: RLOP General

Person Responsible Nelson, Eric J.

Section 2 Reviewer: Nelson, Eric J.

Completed By Nelson, Eric J.

Project/Equipment Title: Reactor Furnaces - Raise Maximum Fuel Gas Pressure Limit

Date Completed 4/13/2004

Description: Plan to raise the fuel gas pressure of furnaces that have the John Zink PSFFG-17 burner installed from a current maximum of 10 psig to 15 psig. This includes F-1110, F-1310, F-1410, and F1610.

Step 1: ☒ Notify USW

☐ USW Representation Present

USW Representative: Keith Parrish

Worker's Committee Member/Steward's comments if unable to attend:

☒ Notify Trainer

☐ Trainer Representation Present

Training Representative: Paul Norris

Step 2: Involve: Operations, Maintenance, Technical and others with appropriate expertise relevant to the change (CRTC, Contractors, etc)

Attendees: Mauricio Gonzalez, John Barthel, Daryl Johnson, Ed Metcalf, Ron Vakulich, Scottie Darbonne, Dan Hopkins, Eric Nelson, Paul Norris, Dan Beckley

Step 3: Think about the task at hand. Discuss the existing situation. Discuss the change. Discuss the impact of the change on the existing situation. Determine the training requirements for this change.

Step 4:

Training Type: 1

Develop a list of concerns, consider your options, consider your following:

\*H2S \*NH3 \*Acid \*Caustic \*Benzene \*Fall Protection \*Staging \*Scott Air \*PPE \*Hot Work \*Confined Space Entry \*Evacuation Plan \*Safety Operator

Concern: Ensure safe firing of burners.

C/A: Dan Beckley will organize a furnace test to witness burner operation at 15 PSIG to ensure stable operation.

See section below labeled, HSE Action Items"

HSE Action Items

Additional Comments

## PROCEDURE REVIEW CHECKLIST

You have been assigned a Procedure Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 12945

Filing Reference

Person Responsible Barthel, John J.

Completed By Norris, Paul

Date Completed 1/10/2005

### Project/Equipment Description:

Plan to raise the fuel gas pressure of furnaces that have the John Zink PSFFG-17 burner installed from a current maximum of 10 psig to 15 psig. This includes F-1110, F-1310, F-1410, and F1610.

- ☐ Alarm Procedures
- ☐ Any Special or unique hazards
- ☐ COD/Ops Monitor
- ☐ Consequences of deviation
- ☐ Control measure to be taken if physical contact or airborne exposure occurs.
- ☐ Precautions necessary to prevent exposure, including administrative controls, engineering controls, and personnel protective equipment.
- ☐ properties of, and hazards presented by, the chemicals and operation of the process.
- ☐ References to additional procedures, such as Safe Work Practices
- ☐ Routine Duties
- ☐ Safety system and their functions
- ☐ Steps required to correct and/or avoid deviation

#### Steps for each operating Phase

- ☐ Emergency
- ☐ Normal
- ☐ Start-Up/Shutdown
- ☐ Temporary

### SUMMARY OF REVIEW\*

3) Resetting alarm trip point to 15 psi has been deferred since FSSR project will be removing the fuel gas (field) pressure switches. Fuel gas high pressure will become a software (Honeywell) alarm.

\*When possible include copies of documents referenced in the summary.

# Stage Two Training and Communication Review

1/29/2013 9:56:12 AM

- ☒ Identify the affected employees.
  - \* Maintenance and Technical affected?
  - \* Employee who will require training to start up the change based on the level of training.
  - \* Employees who will receive training after the start up BUT before they can perform work affected by the change
- ☐ Procedures have been modified/written (Ops/SSO/Trainer)
- ☒ Identify the affected employees..
  - \* Lesson plan cover sheet (includes training objective statement and list of affected employees)
  - \* Procedural changes (Standing Orders, mark-ups)
  - \* Flow daigrams (final or mark-ups)
- ☒ Determine level of training
- ☒ Training has been scheduled
- ☒ Affected employees have been trained in order to start up the change.

MOC No: 12945

Date Completed: 9/11/2004

Completed By: Nelson, Eric J.

Person Responsible: Nelson, Eric J.

## Project/Equipment Title:

Reactor Furnaces - Raise Maximum Fuel Gas Pressure Limit

## Summary of Review:

1) Field testing confirmed that "reactor" furnace burners can operate at 15 psi without flame liftoff. Burner manufacturer, John Zink, was consulted and agreed that the higher pressure is within burner design limits for stable operation.

2) All other furnace operating limits are unchanged (max skin temperature, CO, O2 and Draft)

3) Resetting alarm trip point to 15 psi has been deferred since FSSR project will be removing the fuel gas (field) pressure switches. Fuel gas high pressure will become a software (Honeywell) alarm.